



LUPEROX® 231 MG 40

1. PRODUCT AND COMPANY IDENTIFICATION

Company

Arkema Inc.
2000 Market Street
Philadelphia, Pennsylvania 19103

Functional Additives

Customer Service Telephone Number: (800) 331-7654
(Monday through Friday, 8:30 AM to 5:30 PM EST)

Emergency Information

Transportation: CHEMTREC: (800) 424-9300
(24 hrs., 7 days a week)
Medical: Rocky Mountain Poison Center: (303) 623-5716
(24 hrs., 7 days a week)

Product Information

Product name: LUPEROX® 231 MG 40
Synonyms: 1,1-Bis(t-butylperoxy)-3,3,5-trimethylcyclohexane on a carrier of ethylene-propylene rubber
Molecular formula: C₁₇H₃₄O₄
Chemical family: Organic peroxide - peroxyketals
Product use: Initiator

2. HAZARDS IDENTIFICATION

Emergency Overview

Color: off-white
Physical state: solid
Form: granules
Odor: mild

WARNING!
ORGANIC PEROXIDE.
HAZARDOUS DECOMPOSITION MAY OCCUR.
MAY FORM COMBUSTIBLE DUST AIR MIXTURES.

Potential Health Effects

Primary routes of exposure:
Inhalation and skin contact.

Signs and symptoms of acute exposure:
The product, in the form supplied, is not anticipated to produce significant adverse human health effects.

Skin:
Practically nontoxic. Slightly irritating. (based on components)

Inhalation:

Practically nontoxic. (based on components)

Eyes:

Practically non-irritating. (based on components)

Ingestion:

Practically nontoxic. (based on components)

Remarks:

Handle in accordance with good industrial hygiene and safety practice.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Wt/Wt	OSHA Hazardous
Ethylene-propylene copolymer	9010-79-1	60 %	N
Peroxide, (3,3,5-trimethylcyclohexylidene)bis[(1,1-dimethylethyl)	6731-36-8	40 %	Y

The substance(s) marked with a "Y" in the Hazard column above, are those identified as hazardous chemicals under the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200).

This material is classified as hazardous under Federal OSHA regulation.

4. FIRST AID MEASURES

Inhalation:

If inhaled, remove victim to fresh air.

Skin:

In case of contact, immediately flush skin with plenty of water. Remove material from clothing. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eyes:

Immediately flush eye(s) with plenty of water.

Ingestion:

If swallowed, DO NOT induce vomiting. Get medical attention. Never give anything by mouth to an unconscious person.

5. FIRE-FIGHTING MEASURES

Flash point	Not determined
Auto-ignition temperature:	Not determined
Lower flammable limit (LFL):	Not determined
Upper flammable limit (UFL):	Not determined

Extinguishing media (suitable):

Water spray, Carbon dioxide (CO₂), Foam, Dry chemical

Protective equipment:

Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand / NIOSH approved or equivalent). Fire fighting equipment should be thoroughly decontaminated after use.

Further firefighting advice:

Fight fire with large amounts of water from a safe distance.

Do not use a solid stream of water.

A solid stream of water can cause a dust explosion.

Cool closed containers exposed to fire with water spray.

After a fire, wait until the material has cooled to room temperature before initiating clean-up activities.

Closed containers of this material may explode when subjected to heat from surrounding fire.

Fire and explosion hazards:

Contact with materials to avoid or exposure to temperatures exceeding the SADT may result in a self accelerating decomposition reaction with release of flammable vapors which may autoignite.

Dust clouds generated during handling and/or storage can form explosive mixtures with air. Dust explosion characteristics vary with the particle size, particle shape, moisture content, contaminants, and other variables.

Note: Check that all equipment is properly grounded and installed to satisfy electrical classification requirements. As with any dry material, pouring this material or allowing it to free-fall or to be conveyed through chutes or pipes can accumulate and generate electrostatic sparks, potentially causing ignition of the material itself, or of any flammable materials which may come into contact with the material or its container.

When burned, the following hazardous products of combustion can occur:

Carbon oxides

6. ACCIDENTAL RELEASE MEASURES**In case of spill or leak:**

Stop the leak if you can do so without risk. Ventilate the area. Avoid dust formation. Wet down (dampen) the spilled material with water. Sweep or scoop up using non-sparking tools and place into suitable container for disposal. The sweepings should be wetted down further with water. Do not allow to enter drains or waterways. Dispose of promptly. Clean contaminated floors and objects thoroughly with water and detergents, observing environmental regulations. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

7. HANDLING AND STORAGE

Handling

General information on handling:

Contact with materials to avoid or exposure to temperatures exceeding the SADT may result in a self accelerating decomposition reaction with release of flammable vapors which may autoignite.

Keep away from heat, sparks and flames.

Handle in accordance with good industrial hygiene and safety practices. These practices include avoiding unnecessary exposure and removal of material from eyes, skin, and clothing.

Prevent product contamination.

Keep container tightly closed and away from combustible materials.

Avoid creating dust in handling, transfer or clean up.

Prevent dust accumulation.

Check that all equipment is properly grounded and installed to satisfy electrical classification requirements.

Do not reuse container as it may retain hazardous product residue.

Container hazardous when empty.

Emptied container retains vapor and product residue.

Follow label warnings even after container is emptied.

RESIDUAL DUSTS MAY EXPLODE ON IGNITION.

DO NOT CUT, DRILL, GRIND, OR WELD ON OR NEAR THIS CONTAINER.

Improper disposal or reuse of this container may be dangerous and/or illegal.

Storage

General information on storage conditions:

Outside or detached storage is preferred. Store in well ventilated area away from heat and sources of ignition such as flame, sparks and static electricity. Ensure that all storage and handling equipment is properly grounded and installed to satisfy electrical classification requirements. Static electricity may accumulate when transferring material. All storage containers, including drums, cylinders and IBCs, must be bonded and grounded during filling and emptying operations. Store out of direct sunlight in a cool well-ventilated place. Store away from combustibles and materials to avoid. Refer also to National Fire Protection Association (NFPA) Code 432, Code for the Storage of Organic Peroxide Formulations.

Storage stability – Remarks:

Stable under recommended storage conditions. To maintain stability and active oxygen content, store below 86 F (30 C).

Storage incompatibility – General:

Store away from excessive heat, sources of ignition, and reactive materials. Store separate from:

Acids (concentrated solutions)

Bases

Reducing agents

Heavy metal salts

Temperature tolerance – Do not store above:

86 °F (30 °C)



8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne Exposure Guidelines:

Particles Not Otherwise Specified / Nuisance Dust

US. ACGIH Threshold Limit Values

Form:	Inhalable particles.
Time Weighted Average (TWA):	10 mg/m ³
Form:	Respirable particles.
Time Weighted Average (TWA):	3 mg/m ³

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Form:	Respirable fraction.
PEL:	5 mg/m ³

Remarks:	All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by the Particulates Not Otherwise Regulated (PNOR) limit which is the same as the inert or nuisance dust limit of Table Z-3.
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Form:	Total dust.
PEL:	15 mg/m ³

Remarks:	All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by the Particulates Not Otherwise Regulated (PNOR) limit which is the same as the inert or nuisance dust limit of Table Z-3.
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Only those components with exposure limits are printed in this section. Limits with skin contact designation above have skin contact effect. Air sampling alone is insufficient to accurately quantitate exposure. Measures to prevent significant cutaneous absorption may be required. Limits with a sensitizer designation above mean that exposure to this material may cause allergic reactions.

Engineering controls:

Investigate engineering techniques to reduce exposures below airborne exposure limits or to otherwise reduce exposures. Provide ventilation if necessary to minimize exposures or to control exposure levels to below airborne exposure limits (if applicable see above). Provide ventilation if necessary to control exposure levels below airborne exposure limits (see above). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment. Consult ACGIH ventilation manual or NFPA Standard 91 for design of exhaust systems.

Respiratory protection:

Avoid breathing dust. Where airborne exposure is likely or airborne exposure limits are exceeded (if applicable, see above), use NIOSH approved respiratory protection equipment appropriate to the material and/or its

components. Consult respirator manufacturer to determine appropriate type equipment for a given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where there may be a potential for significant exposure or where exposure limit may be significantly exceeded, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR § 1910.134.

Skin protection:

Minimize skin contamination by following good industrial hygiene practice. Wearing protective gloves is recommended. Wash thoroughly after handling.

Eye protection:

Use good industrial practice to avoid eye contact.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	off-white
Physical state:	solid
Form:	granules
Odor:	mild
pH:	not applicable
Density:	no data available
Specific Gravity (Relative density):	no data available
Bulk density:	510 kg/m ³
Vapor pressure:	not determined
Vapor density:	not determined
Boiling point/boiling range:	not determined
Melting point/range:	not determined
Evaporation rate:	not determined
Solubility in water:	insoluble
Self-Accelerating Decomposition Temperature (SADT):	140 °F (60 °C) Expressed as pure peroxide

10. STABILITY AND REACTIVITY**Stability:**

This material is chemically unstable and should only be handled under specified conditions.

Hazardous reactions:

Hazardous polymerization does not occur.

Materials to avoid:

Heavy metal salts
Strong acids
Strong bases.
Reducing agents

Conditions / hazards to avoid:

See HANDLING AND STORAGE section of this MSDS for specified conditions. SADT - Self Accelerating Decomposition Temperature. Lowest temperature at which the tested package size will undergo a self-accelerating decomposition reaction. This reaction will generate flammable vapors which may autoignite. The length of time to generate a decomposition reaction, after the SADT has been reached or exceeded, is dependent upon how much the SADT has been exceeded and the length of time needed for the reaction exotherm (heat spike from increasing decomposition rate) to initiate a rapid decomposition reaction. Typically, SADT is inversely proportional to package size. Larger packages will have a lower SADT due to smaller ratio to heat transfer area to volume of product.

Hazardous decomposition products:

Thermal decomposition giving flammable and toxic products. :
Acetophenone
Ethane
Methane
Phenol

11. TOXICOLOGICAL INFORMATION

Data on this material and/or its components are summarized below.

Data for Peroxide, (3,3,5-trimethylcyclohexylidene)bis[(1,1-dimethylethyl) (6731-36-8)**Acute toxicity****Oral:**

Practically nontoxic. (rat) LD50 > 12,918 mg/kg. (75 %) (in dibutyl phthalate)

Dermal:

Practically nontoxic. (rabbit) LD50 > 8,000 mg/kg. (75 %) (in dibutyl phthalate)

Inhalation:

Practically nontoxic. (rat) 4 h LC50 > 400 mg/l. (75 %) (in dibutyl phthalate)

Skin Irritation:

Slightly irritating. (rabbit) 2.15 / 8.0. (97.4 %) (purity)

Eye Irritation:

Practically non-irritating. (rabbit) Irritation Index: 1.3/110. (75% in dibutyl phthalate)

Skin Sensitization:

Repeated skin exposure. (guinea pig) No skin allergy was observed. (97.4 %)

Repeated dose toxicity

Repeated dietary administration to mouse / affected organ(s): spleen, liver, bone marrow / signs: changes in organ weights / reduced body weight

Repeated dietary administration to mouse / increased mortality

Carcinogenicity

Repeated dietary administration to mouse / No increase in tumor incidence was reported.

Genotoxicity**Assessment in Vitro;**

No genetic changes were observed in laboratory tests using: bacteria, human cells

12. ECOLOGICAL INFORMATION**Chemical Fate and Pathway**

Data on this material and/or its components are summarized below.

Data for Peroxide, (3,3,5-trimethylcyclohexylidene)bis[(1,1-dimethylethyl) (6731-36-8)**Biodegradation:**

Not readily biodegradable. (Closed Bottle test, 28 d) biodegradation 2 %

Bioaccumulation:

56 d BCF 3,500 - 123,200 (Carp)

Octanol Water Partition Coefficient:

log Pow > 5

Ecotoxicology

Data on this material and/or its components are summarized below.

Data for Peroxide, (3,3,5-trimethylcyclohexylidene)bis[(1,1-dimethylethyl) (6731-36-8)**Aquatic invertebrates:**

Highly toxic. Daphnia magna (Water flea) 48 h EC50 = 0.133 mg/l

13. DISPOSAL CONSIDERATIONS**Waste disposal:**

Disposal via incineration is recommended. Dispose of in accordance with federal, state and local regulations. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits. Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information incomplete, inaccurate, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations.

14. TRANSPORT INFORMATION**US Department of Transportation (DOT)**

UN Number : 3110
Proper shipping name : Organic peroxide type F, solid
Technical name : (1,1-Di(tert-butylperoxy)-3,3,5-trimethylcyclohexane, <=57%)
Class : 5.2
Packaging group : II
Marine pollutant : no

International Maritime Dangerous Goods Code (IMDG)

UN Number : 3110
Proper shipping name : ORGANIC PEROXIDE TYPE F, SOLID
Technical name : (1,1-DI-(tert-BUTYLPEROXY)-3,3,5-TRIMETHYLCYCLOHEXANE, <=57%)
Class : 5.2
Marine pollutant : yes

15. REGULATORY INFORMATION**Chemical Inventory Status**

EU. EINECS	EINECS	Conforms to
US. Toxic Substances Control Act	TSCA	The components of this product are all on the TSCA Inventory.
Australia. Industrial Chemical (Notification and Assessment) Act	AICS	Conforms to
Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL). (Can. Gaz. Part II, Vol. 133)	DSL	All components of this product are on the Canadian DSL list.
Japan. Kashin-Hou Law List	ENCS (JP)	Conforms to
Korea. Toxic Chemical Control Law (TCCL) List	KECI (KR)	Conforms to
Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act	PICCS (PH)	Conforms to
China. Inventory of Existing Chemical Substances	IECSC (CN)	Conforms to
New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand	NZIOC	Conforms to



United States – Federal Regulations

SARA Title III – Section 302 Extremely Hazardous Chemicals:

The components in this product are either not SARA Section 302 regulated or regulated but present in negligible concentrations.

SARA Title III - Section 311/312 Hazard Categories:

Fire Hazard, Reactivity Hazard

SARA Title III – Section 313 Toxic Chemicals:

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) - Reportable Quantity (RQ):

The components in this product are either not CERCLA regulated, regulated but present in negligible concentrations, or regulated with no assigned reportable quantity.

OSHA Regulated Carcinogens (NTP, IARC, OSHA Listed):

NTP:

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

IARC:

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA:

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

United States – State Regulations

Massachusetts Right to Know

No components are subject to the Massachusetts Right to Know Act.

New Jersey Right to Know

<u>Chemical Name</u>	<u>CAS-No.</u>
Peroxide, (3,3,5-trimethylcyclohexylidene)bis[(1,1-dimethylethyl)	6731-36-8

Pennsylvania Right to Know

<u>Chemical Name</u>	<u>CAS-No.</u>
Peroxide, (3,3,5-trimethylcyclohexylidene)bis[(1,1-dimethylethyl)	6731-36-8
Ethylene-propylene copolymer	9010-79-1



California Prop. 65

This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive defects.

16. OTHER INFORMATION

Latest Revision(s):

Revised Section(s):	Product name change to Luperox
Reference number:	00000060501
Date of Revision:	12/08/2009
Date Printed:	12/08/2009

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